FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

December 25 to December 31, 2011 (Week 52)

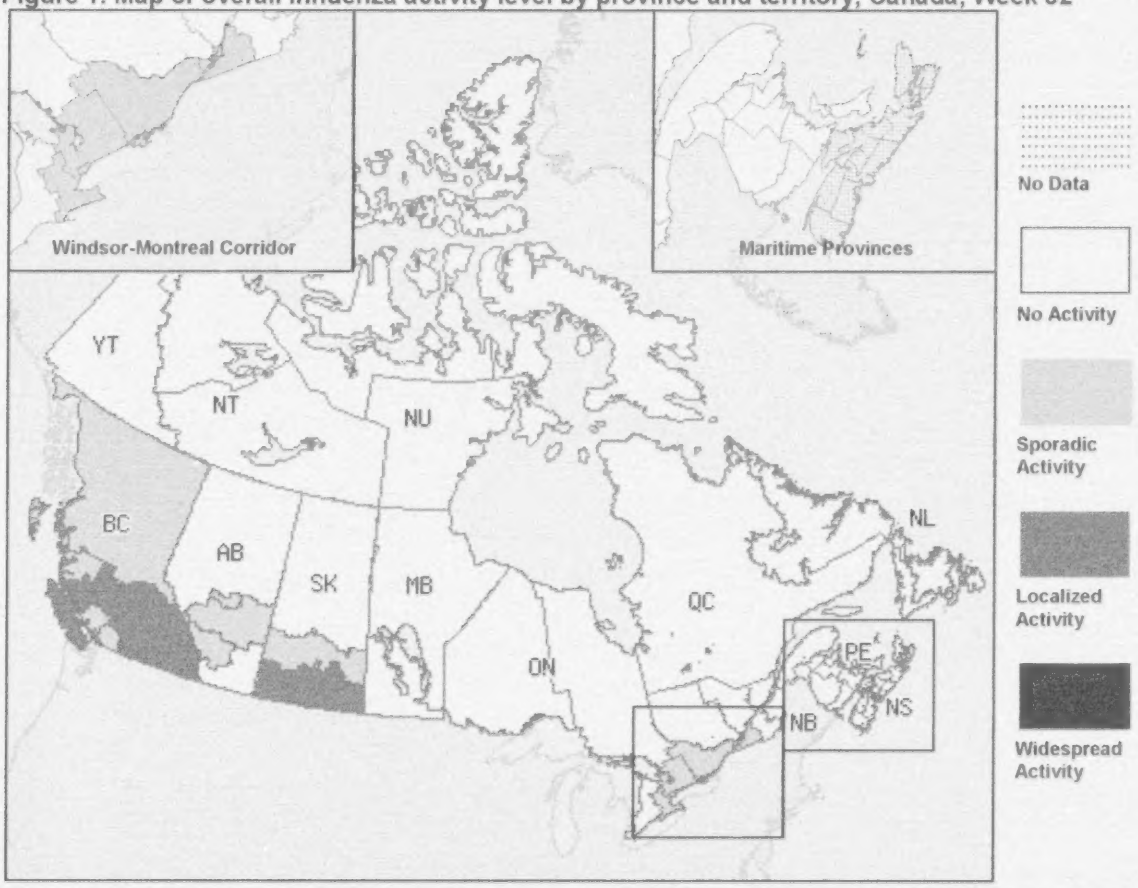
Overall Influenza Summary

- Influenza activity in Canada is increasing in some regions but remains low in most areas of the country
- Three regions (within BC & SK) reported localized influenza activity and 13 regions (within BC, AB, SK, ON & QC) reported sporadic influenza activity
- Three outbreaks of influenza in a long-term care facilities were reported this week
- In week 52, 73 laboratory detections of influenza were reported (42 A/H3, 1 A(H1N1)pdm09, 15 A unsubtyped and 15 B)
- Seven paediatric influenza hospitalizations were reported this week (in BC, AB, ON & QC)
- The national ILI consultation rate increased this week compared to previous weeks but remains within expected levels for this time of year.

Influenza Activity (geographic spread) and Outbreaks

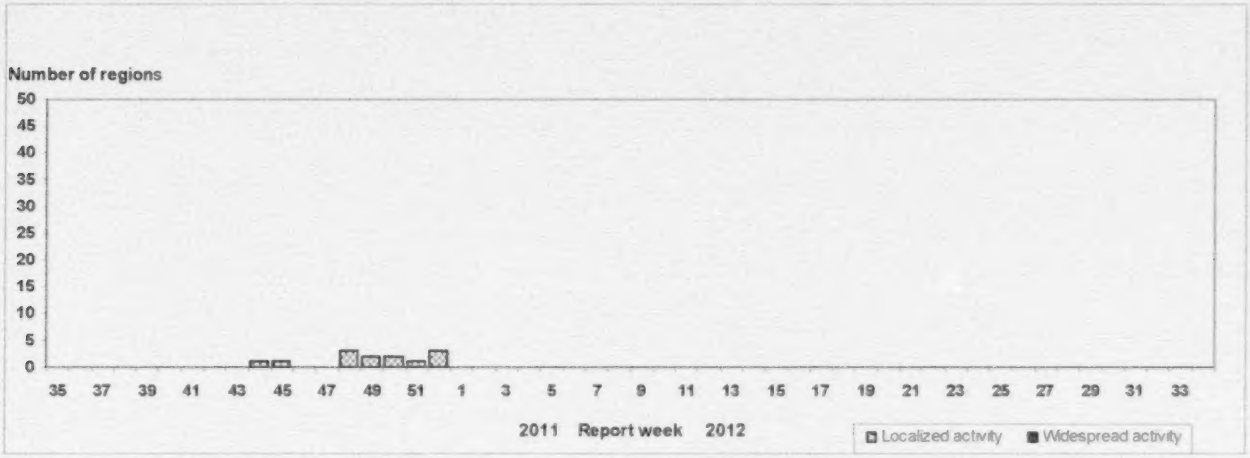
In week 52, three surveillance regions (within BC & SK) reported localized activity and 13 regions (within BC, AB, SK, ON & QC) reported sporadic influenza activity. Note that data was not received from NS this week (see Figure 1). Three outbreaks of influenza were reported this week, all in long-term care facilities (2 in BC and 1 in SK) (Figure 3).

Figure 1. Map of overall Influenza activity level by province and territory, Canada, Week 52



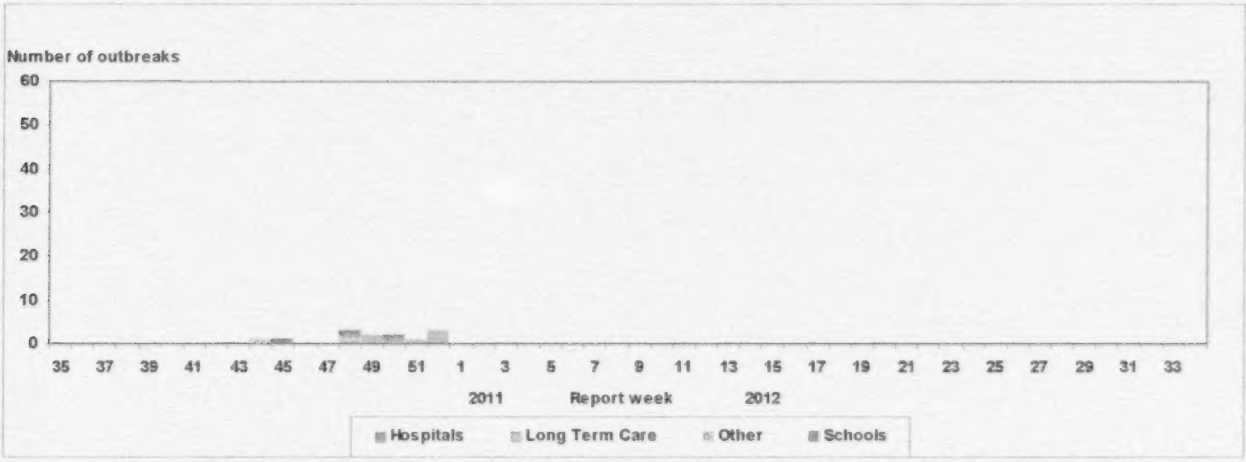
Note: Influenza activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates (see graphs and tables) and reported outbreaks. Please refer to detailed definitions on the last page. For areas where no data is reported, late reports from these provinces and territories will appear on the FluWatch website.

Figure 2. Number of influenza surveillance regions† reporting widespread or localized influenza activity, Canada, by report week, 2011-2012 (N=56)



† sub-regions within the province or territory as defined by the provincial/territorial epidemiologist. Graph may change as late returns come in.

Figure 3. Overall number of influenza outbreaks, Canada, by report week, 2011-2012



Influenza and Other Respiratory Virus Detections

In week 52, the proportion of positive influenza tests increased slightly to 2.6% (73/2,789) (Figure 4 & 5). Of the provinces reporting positive influenza detections, the proportion of tests positive ranged from a high of 19.7% in SK to a low of 0.8% in AB.

The proportion of influenza virus detections by type/subtype this season to date is as follows: 84.6% influenza A (76% - A(H3); 6% - A(H1N1)pdm09; 18% - unsubtyped) and 15.4% influenza B (Table 1).

Detailed information on age and type/subtype were received on 299 cases this season to date (Table 2). The proportions of cases by age group are as follows: 21.4% were < 5 years; 11.4% were between 5-19 years; 24.7% were between 20-44 years; 14.7% were between 45-64 years of age; and 27.8% were >= 65 years.

In week 52, the proportion of tests positive for RSV continued to increase (19.8%), with the highest percent positives being reported in NB, NS, QC and ON. The proportion of positive tests for the other respiratory viruses remained similar to previous weeks (rhinovirus-6.5%; parainfluenza-3.6%; adenovirus-3.9%; hMPV-7.8%; coronavirus-3.4%) (Figure 5). For more details, see the weekly Respiratory Virus Detections in Canada report.

Table 1. Weekly & Cumulative numbers of positive influenza specimens by Provincial Laboratories, Canada, 2011-2012

Reporting provinces	December 25 to December 31, 2011)						Cumulative (August 28, 2011 to December 31, 2011)					
	Influenza A					B	Influenza A					B
	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total
BC	20	0	20	0	0	2	107	0	107	0	0	6
AB	12	0	11	0	1	3	58	0	54	1	3	7
SK	14	0	10	0	4	0	35	0	31	0	4	0
MB	0	0	0	0	0	0	0	0	0	0	0	0
ON	4	0	1	1	2	5	32	0	15	13	4	16
QC	8	0	0	0	8	5	42	0	0	3	39	20
NB	0	0	0	0	0	0	0	0	0	0	0	1
NS	0	0	0	0	0	0	0	0	0	0	0	0
PE	0	0	0	0	0	0	0	0	0	0	0	0
NL	0	0	0	0	0	0	0	0	0	0	0	0
Canada	58	0	42	1	15	15	274	0	207	17	50	50

*Unsubtyped: The specimen was typed as influenza A, but no test for subtyping was performed. Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Note: Weekly data is based on week of positive lab detection. Cumulative data includes updates to previous weeks; due to reporting delays, the sum of weekly report totals do not add up to cumulative totals.

Table 2. Weekly & Cumulative numbers of positive influenza specimens by age groups reported through case-based laboratory reporting, Canada, 2011-2012*

Age groups	Weekly (Dec. 25 to Dec. 31, 2011)					Cumulative (Aug. 28, 2011 to Dec. 31, 2011)				
	Influenza A				B	Influenza A				B
	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total
<5	9	1	7	1	3	52	8	36	8	12
5-19	4	0	4	0	0	28	1	26	1	6
20-44	9	0	9	0	0	67	4	55	8	7
45-64	11	0	10	1	1	39	0	35	4	5
65+	13	0	13	0	2	76	1	69	6	7
Unknown	0	0	0	0	0	0	0	0	0	0
Total	46	1	43	2	6	262	14	221	27	37

*Please note that this table reflects the number of specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. Delays in the reporting of data may cause data to change retrospectively.

Figure 4. Influenza tests reported and percentage of tests positive, Canada, by report week, 2011-2012

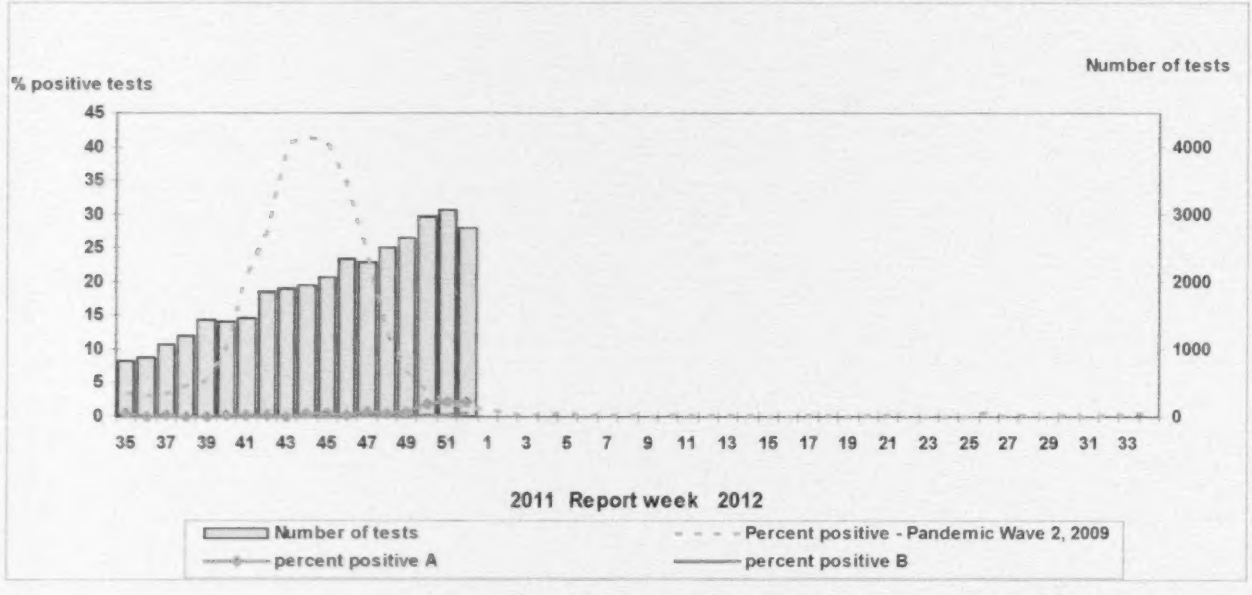
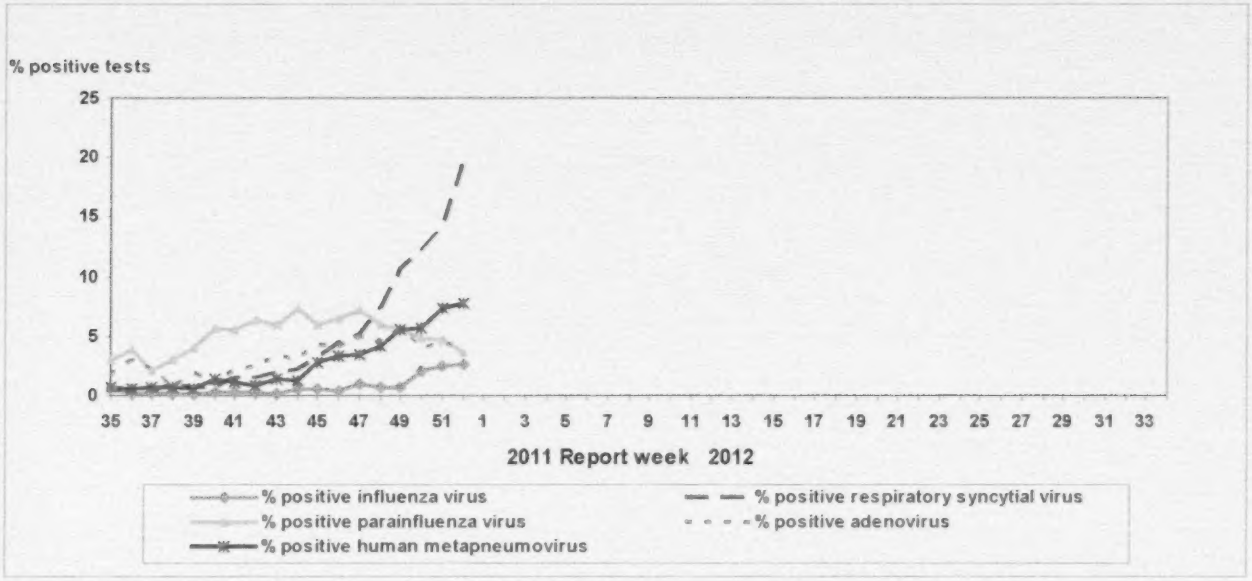


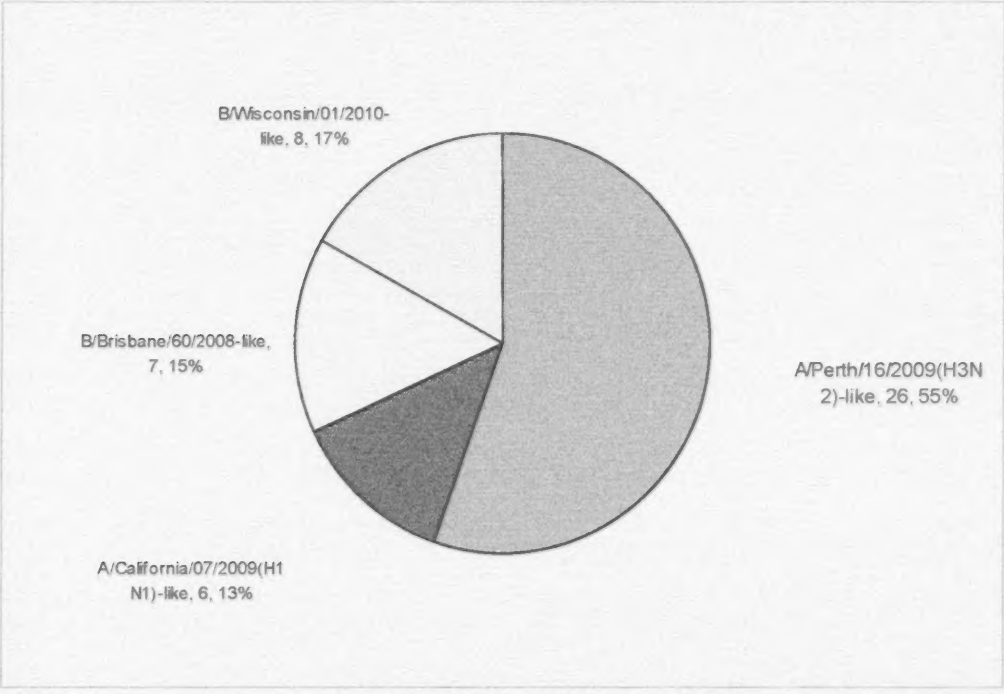
Figure 5. Percent positive influenza tests, compared to other respiratory viruses, Canada, by reporting week, 2011-2012


% positive tests
25
20
15
10
5
0
35 37 39 41 43 45 47 49 51 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33
2011 Report week 2012
% positive influenza virus
% positive parainfluenza virus
% positive human metapneumovirus
% positive respiratory syncytial virus
% positive adenovirus

Influenza Strain Characterizations

Since the start of the season, the National Microbiology Laboratory (NML) has antigenically characterized 47 influenza viruses (26 A/H3N2, 6 A/H1N1 and 15 B). All 26 A/H3N2 viruses (from BC, AB & ON) are antigenically related to A/Perth/16/2009. All 6 A/H1N1 viruses (from QC & ON) are antigenically related to A/California/07/2009. Seven of the influenza B viruses characterized (from BC, AB, ON & QC) are antigenically related to the vaccine strain B/Brisbane/60/2008 (Victoria lineage). The other 8 influenza B viruses (from BC, AB, ON & NB) are antigenically related to the reference virus B/Wisconsin/01/2010-like, which belongs to the Yamagata lineage. (Figure 6)

Figure 6. Influenza strain characterizations, Canada, 2011-2012, N = 47



Note: The recommended components for the 2011-2012 Northern Hemisphere influenza vaccine include: A/Perth/16/2009 (H3N2), A/California/7/2009 (H1N1) and B/Brisbane/60/2008.

Antiviral Resistance

Since the beginning of the season, NML has tested 45 influenza viruses (25 A/H3N2, 6 A/H1N1 and 14 B) for resistance to oseltamivir (by phenotypic assay and/or sequencing) and for resistance to zanamivir (by phenotypic assay) and it was found that all 45 viruses were susceptible to oseltamivir and zanamivir. A total of 29 influenza A viruses (24 H3N2 and 5 H1N1) were tested for amantadine resistance and all 29 were found to be resistant. (Table 3)

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2011-2012

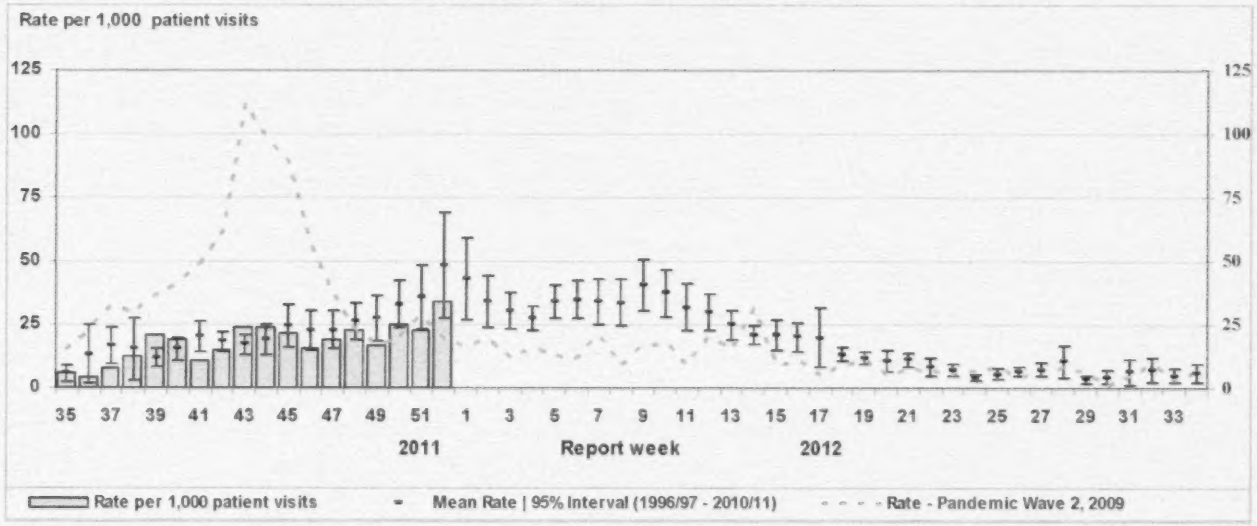
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	25	0	25	0	24	24 (100%)
A (H1N1)	6	0	6	0	5	5 (100%)
B	14	0	14	0	NA*	NA*
TOTAL	45	0	45	0	29	29 (100%)

* NA – not applicable

Influenza-like Illness (ILI) Consultation Rate

The national ILI consultation rate increased from previous weeks to 33.8 ILI consultations per 1,000 patient visits in week 52 and is within the expected levels for this time of year (Figure 7). The highest consultation rates this week were observed in children under 5 (86.5/1,000 visits) and those 5 to 19 years old (49.3/1,000).

Figure 7. Influenza-like illness (ILI) consultation rates, Canada, by report week, 2011-2012 compared to 1996/97 through to 2010/11 seasons (with pandemic data suppressed)



Note: No data available for mean rate in previous years for weeks 19 to 39 (1996-1997 through 2002-2003 seasons). Delays in the reporting of data may cause data to change retrospectively.

Severe Illness Surveillance

Paediatric Influenza Hospitalizations and Deaths
In week 52, seven new laboratory-confirmed influenza-associated paediatric (16 years of age and under) hospitalizations were reported through the Immunization Monitoring Program Active (IMPACT) network. Two hospitalizations were due to influenza A (in BC & AB) and 5 were due to influenza B (1 in AB, 2 in ON & 2 in QC).

To date this season, 25 cases have been reported (from BC, AB, SK, ON & QC); 19 (76%) were due to influenza A and 6 (24%) were due to influenza B. The proportion of cases by age group is as follows: 16% among infants <6 months of age; 12% among children 6-24 months of age; 44% were between 2-4 years; 12% were between 5-9 years; and 16% were between 10-16 years.

Adult Influenza Hospitalizations and Deaths
In week 52, no new laboratory-confirmed influenza-associated adult hospitalizations were reported.

To date this season, 10 influenza-associated adult hospitalizations have been reported from two provinces (AB & ON). The proportion of cases by age group is as follows: 20% were in those 20-44 years of age; 20% were in those 45-64 years of age and 60% were in those $\geq$ 65 years.

Note: Influenza-associated adult hospitalizations are not reported to PHAC by the following Provinces: BC, QC, & NB. Only hospitalizations that require intensive medical care are reported by SK.

International Influenza Updates

WHO: Influenza activity in the temperate regions of the northern hemisphere remains below seasonal threshold levels. Increases in activity have been reported in areas of Canada, Europe (Spain and Turkey), northern Africa (Tunisia and Algeria) and the middle East (Iran). This increased activity over the last few weeks may indicate the start of the influenza transmissions season. The viruses detected through the northern hemisphere temperate zone have been predominantly of the A(H3N2) subtype. Very small numbers of A(H1N1)pdm09 have been reported in recent weeks. Countries in the tropical zone reported low levels of influenza activity except for Costa Rica, which primarily detected influenza A(H3N2). Influenza activity in the temperate countries of the southern hemisphere is at inter-seasonal levels; although Chile and Australia both report persistent transmission of A(H3N2) with smaller numbers of influenza type B reported in Australia.
World Health Organization influenza update

United States: In week 52, the CDC reported that 2.9% (95/3,310) of influenza tests were positive. Since October 1, 2011, the CDC characterized 129 influenza viruses: 14 A/H1N1, 104 A/H3N2 and 11 B. All A/H1N1 viruses were characterized as A/California/7/2009-like. Of the 104 influenza A/H3N2 viruses that were characterized, 103 were A/Perth/16/2009-like and 1 showed reduced titers with antiserum produced against A/Perth/16/2009. Seven influenza B viruses were characterized as B/Brisbane/60/2008-like (B/Victoria lineage) and 4 B viruses belong to the B/Yamagata lineage. The proportion of outpatient visits for ILI was 1.7%, which is below the national baseline. Regional influenza activity was reported by one state (Colorado), four states reported localized influenza activity (Massachusettes, New Hampshire, Texas and Virginia) while the rest reported either sporadic or no activity.
Centers for Disease Control and Prevention seasonal influenza report

Novel Influenza A Virus: On January 6, 2012 CDC has provided a summary of the 12 human infections with influenza A (H3N2)v viruses that have the matrix (M) gene from the influenza A (H1N1)pmd09 virus (formerly called swine-origin influenza A [H3N2] and pandemic influenza A [H1N1] 2009). The 12 cases occurred in five states (Indiana, Iowa, Maine, Pennsylvania, and West Virginia), and 11 were children. Six of the 12 patients had no identified recent exposure to swine. Three of the 12 patients were hospitalized. The last two cases were children who regularly attended the same day care. All cases have recovered fully. Morbidity and Mortality Weekly Report (MMWR)

Europe: In week 52, levels of influenza activity in Europe remained low. Of the 36 countries reporting on geographical distribution of influenza activity, 3 reported local activity and 14 reported sporadic activity. Out of 36 countries reporting on trends, 4 reported increasing trends. All countries reported low intensity of influenza activity and low impact on their health care services. The percentage of sentinel samples that tested positive for

influenza in week 52 was 24%. Influenza A and B viruses have continued to co-circulate, with influenza A viruses being in the great majority and A(H3N2) viruses representing 94% of the H-subtyped viruses. Since week 40, 24 influenza viruses have been characterized antigenically: 2 were A/California/7/2009 (H1N1)-like; 16 were A/Perth/16/2009 (H3N2)-like; 2 were B/Florida/4/2006-like (B/Yamagata/16/88 lineage), 1 was B/Bangladesh/3333/2007-like (B/Yamagata/16/88 lineage) and 3 were B/Brisbane/60/2008-like (B/Victoria/2/87 lineage).
EuroFlu weekly electronic bulletin

Human Avian Influenza Updates

No new cases of human A/H5N1 avian influenza infection were reported by the WHO since 21 December 2011.
WHO Avian influenza situation updates

FluWatch reports include data and information from the following sources: laboratory reports of positive influenza tests in Canada (National Microbiology Laboratory), sentinel physician reporting of influenza-like illness (ILI), provincial/territorial assessment of influenza activity based on various indicators, including laboratory surveillance, ILI reporting, and outbreaks, influenza-associated paediatric and adult hospitalizations, antiviral sales in Canada, and WHO and other international reports of influenza activity.

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

ILI definition for the 2011-2012 season

ILI in the general population: Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

Definitions of ILI/Influenza outbreaks for the 2011-2012 season

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. workplace, closed communities.

Influenza Activity Levels Definition for the 2011-2012 season

Influenza Regional Activity levels are defined as:

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html. Ce rapport est disponible dans les deux langues officielles. Pour en recevoir un exemplaire dans l'autre langue chaque semaine, veuillez communiquer avec Estelle Arseneault, Division de l'immunisation et des infections respiratoires au (613) 998-8862.